SWCAA
Southwest Clean Air Agency

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Vancouver, WA 98682
(360) 574-3058
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February 15, 2018

Mr. Martin Madarieta
Evergreen School District #114
PO Box 8910
Vancouver, WA 98668

Subject: Notification of Boiler Installation at Mill Plain Elementary (SUN – 161)

Dear Mr. Madarieta:

The Southwest Clean Air Agency (SWCAA) received your Small Unit Notification (SUN) on January 30, 2018 for installation and operation of a new boiler at Mill Plain Elementary. For administrative and tracking purposes SWCAA has assigned tracking number SUN-161 to this notification. This notification was filed in accordance with SWCAA 400-072 and applies to the installation of one boiler. The new boiler was identified as:

(1) Advanced Thermal Hydronics model KN-16, natural gas fired condensing boiler with a rated heat input capacity of 1.600 MMBtu/hr. The boiler will be identified as "Boiler 2" (B-2).

SWCAA has completed a review of your notification and the associated support information and has determined that the notification meets the requirements of SWCAA 400-072(2). Once installed, affected equipment must maintain compliance with the requirements of SWCAA 400-072(5)(b) **"Small gas fired boilers/heaters"**. A copy of the relevant SWCAA 400-072 section is attached for your information. SWCAA 400-072(5)(b)(v) requires that emissions from the unit be tested within 60 days of initial operation and annually thereafter. Because you have other boilers that require testing, SWCAA hereby approves the utilization of the currently approved testing schedule for the other boilers in the Evergreen School District for all subsequent testing of the new boiler. The currently approved testing schedule for the other boilers in the Evergreen School District requires that boiler testing be conducted by the end of March each year.

Be advised that emission units installed pursuant to SWCAA 400-072 are subject to source registration and periodic inspeetion. Registration fees for this equipment will be invoiced consistent with SWCAA 400-100.

If you need further assistance or have any questions regarding these matters, please eontact me at (360) 574-3058 extension 130.

Sincerely,

Paul T. Mairose
Chief Engineer

SWCAA 400-072 Emission Standards for Selected Small Source Categories

[Statutory Authority: Chapter 70.94.141 RCW. Original adoption 09-21-056 filed 10/15/09, effective 11/15/09, 16-19-009 filed 9/8/16, effective 10/9/16; 17-11-078 filed 5/18/17, effective 6/18/17]

(5) **Source categories.**

(b) **Small gas fired boilers/heaters.**

(i) **Applicability.** The provisions of this section apply to gas fired (natural gas/propane/LPG) boilers and heaters with individual rated heat inputs equal to or greater than 0.4 MMBtu/hr and equal to or less than 2.0 MMBtu/hr. For the purposes of this subsection, the term "boiler" means any combustion equipment designed to produce steam or to heat water that is not used exclusively to produce electricity for sale.

(ii) **Emission limits and standards.**

(A) Visible emissions from the boiler exhaust stack shall not exceed zero percent opacity for more than 3 minutes in any one hour period as determined in accordance with SWCAA Method 9. (SWCAA 400, Appendix A).

(B) Each boiler/heater shall be equipped with combustion technology capable of maintaining NO_X and CO emissions at, or below, 30 ppmv and 50 ppmv, respectively (corrected to 3% O_2, dry, 1-hr avg). EPA test methods from 40 CFR 60, as in effect on July 1, 2015, shall be used to determine compliance.

(iii) **General requirements.**

(A) Each boiler/heater shall only be fired on natural gas, propane, or LPG.

(iv) **Monitoring and recordkeeping requirements.** The information listed below shall be recorded at the specified intervals, and maintained in a readily accessible form for a minimum of 3 years. With the exception of data logged by a computerized data acquisition system, each required record shall include the date and the name of the person making the record entry.

(A) Quantity of fuel consumed by the boiler/heater shall be recorded for each calendar month;

(B) Maintenance activities for the boiler/heater shall be logged for each occurrence;

(C) Upset conditions that cause excess emissions shall be recorded for each occurrence; and

(D) All air quality related complaints received by the permittee and the results of any subsequent investigation or corrective action shall be recorded promptly after each occurrence.

(v) **Testing requirements.**

(A) Each boiler/heater shall undergo emission monitoring no later than 60 calendar days after commencing initial operation. Subsequent monitoring shall be conducted annually thereafter no later than the end of the month in which the original monitoring was conducted. All emission monitoring shall be conducted in accordance with the requirements of SWCAA 400-106(2).

(B) If emission monitoring results for a boiler/heater indicate that emission concentrations may exceed 30 ppmvd NO_X or 50 ppmvd CO, corrected to 3% O_2, the owner or operator shall either perform 60 minutes of additional monitoring to more accurately quantify CO and NO_X

emissions, or initiate corrective action. Corrective action shall be initiated as soon as practical but no later than 3 business days after the potential exceedance is identified. Corrective action includes burner tuning, maintenance by service personnel, limitation of unit load, or other action taken to lower emission concentrations. Corrective action shall be pursued until observed emission concentrations no longer exceed 30 ppmvd NO_X or 50 ppmvd CO, corrected to 3% O_2.

(vi) **Reporting requirements.**

(A) The owner or operator of an affected emission unit shall provide written notification of initial operation to SWCAA within 10 days of occurrence.

(B) All air quality related complaints received by the owner or operator shall be reported to the Agency within 3 business days of receipt.

(C) Emission monitoring results for each boiler/heater shall be reported to the Agency within 15 calendar days of completion on forms provided by the Agency.

(D) The owner or operator of an affected boiler/heater shall report the following information to the Agency no later than March 15th for the preceding calendar year:

(I) Quantity of fuel consumed; and

(II) Air emissions of criteria air pollutants, VOCs, and toxic air pollutants (TAPs).

Summary Information (by SWCAA) for SUN-161, SUN-162

Evergreen School District No. 114 – Mill Plain Elementary School

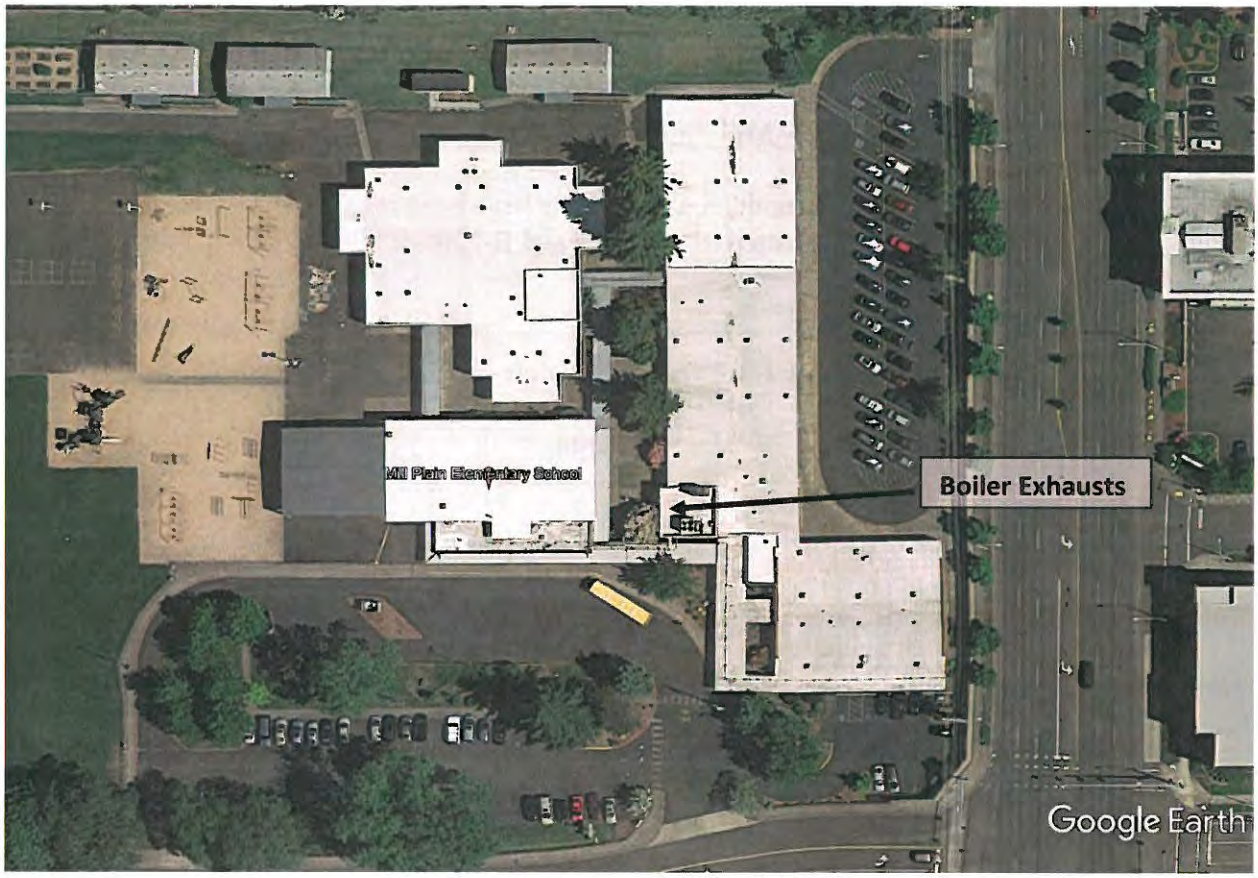
Two Advanced Thermal Hydronics model KN-16 boilers have been installed to replace two Cleaver-Brooks boilers. The new boilers are referred to as B-1 and B-2.

Units Being Removed

Make (Identification)	Model	Serial Number	Heat Input (MMBtu/hr)
Cleaver-Brooks (Facility ID: B-1)	CB-500-50HP	L60144	2.092
Cleaver-Brooks (Facility ID: B-2)	CB-500-50HP	L60145	2.092

New Boiler Information – SUN-161, SUN-162

Boiler Identification:	Boiler 1 (B-1) and Boiler 2 (B-2)
Location:	Mill Plain Elementary 400 SE 164th Avenue, Vancouver, WA 98684
Boiler Make/Model:	Advanced Thermal Hydronics / KN-16
Serial Numbers:	Boiler 1: 61745694 Boiler 2: 61745693
Built:	June 2017
Installed:	August 1 – September 1, 2017
Burner:	Pre-mix metal fiber burner
Heat Input Rating:	1.600 MMBtu/hr with 5:1 turndown
Fuel:	Natural gas
Stack Description:	Each boiler discharges vertically through a separate flue that penetrates the roof of the Mechanical Room. The stacks are vertically oriented with stack caps, ~8" diameter, exhausting ~19' above grade and 7' above the roof. ~45°37'5.55"N, 122°30'18.60"W



Google Earth Image May 22, 2017

Potential Emissions

Mill Plain Elementary - SUNs-161, 162 (Boilers B-1 and B-2) - each boiler						
Heat Rate =			1.600	MMBtu/hr		
Natural Gas Heat Value =			1,020	Btu/scf for AP-42 emission factors		
Natural Gas Heat Value =			1,026	Btu/scf for 40 CFR 98 GHG emission factors		
Fuel Consumption =			13.741	MMscf/yr		
	ppmvd	Emission Factor				
Pollutant	@ 3% O_2	lb/MMBtu	lb/MMscf	lb/hr	tpy	Emission Factor Source
NO_X	30	0.0364	37.1	5.8E-02	0.26	SWCAA 400-072
CO	50	0.0370	37.7	5.9E-02	0.26	SWCAA 400-072
VOC		0.0054	5.5	8.6E-03	0.038	AP-42 Sec. 1.4 (7/98)
SO_X as SO_2		0.0006	0.6	9.4E-04	0.004	AP-42 Sec. 1.4 (7/98)
PM		0.0075	7.6	1.2E-02	0.052	AP-42 Sec. 1.4 (7/98)
PM_{10}		0.0075	7.6	1.2E-02	0.052	AP-42 Sec. 1.4 (7/98)
$PM_{2.5}$		0.0075	7.6	1.2E-02	0.052	AP-42 Sec. 1.4 (7/98)
Benzene		2.06E-06	0.0021	3.3E-06	1.4E-05	AP-42 Sec. 1.4 (7/98)
Formaldehyde		7.35E-05	0.075	1.2E-04	5.2E-04	AP-42 Sec. 1.4 (7/98)
Greenhouse			CO_2e	CO_2e		
Gases	kg/MMBtu	GWP	lb/MMBtu	lb/MMscf	tpy, CO_2e	Emission Factor Source
CO_2	53.06	1	116.98	120,019	820	40 CFR 98
CH_4	0.001	25	0.055	56.55	0.4	40 CFR 98
N_2O	0.0001	298	0.066	67.41	0.5	40 CFR 98
Total GHG	53.0611		117.098	120,143	821	